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Appendix I.

[Vide answer to question No. 1910 asked by Mr. A. Kaleswara Rao at the meeting of the Legislative Council held on the 26th March 1929, page 858 supra.]

G.O. Mis. No. 1194, L. & M., dated 30th March 1927.

As the law stands at present presidents of district boards have no power to restrict the number of motor buses plying for hire on any road by refusing to grant a licence to a bus, provided the grant of such licence is otherwise unobjectionable. The proper way to limit the number of public motor vehicles on any road and incidentally to secure the funds required to repair the damage done by them to the road is to fix the licence fee at a figure which will cover the cost of repair of the wear and tear caused.

(By order of the Government, Ministry of Education and Local Self-Government)

C. B. Cotterell,
Secretary to Government.

To all Presidents of District Boards (except Chingleput, Vizagapatam and North Arcot).
Copies to all Collectors.
Copy to the Law (General) Department.
" " Inspector of Municipal Councils and Local Boards.

Appendix II.

[Vide answer to question No. 1916 asked by Dr. B. S. Mallayya at the meeting of the Legislative Council held on the 26th March 1929, page 862 supra.]

ANNEXURE.

Reports of the Committee appointed by the Surgeon-General to investigate the recent outbreak of cholera in the General Hospital, Madras.

First Report.

Letter from the Surgeon-General with the Government of Madras, R. No. 2454-General of 1928, dated 29th January 1929.

[*Reference.*—My letters Nos. 2454-1 G and 2454-2 G of 1928, dated 10th and 11th December 1928, on the occurrence of cholera in the Government General Hospital.]

I have the honour to forward herewith a copy of the report of the Committee consisting of Lieut.-Col. J. M. Skinner, I.M.S., Lieut.-Col. H. H. King, I.M.S., and M.R.Ry. Rao Bahadur M. R. Guruswami Mudaliyar Avargal, B.A., M.D.C.M., which has considered the recent outbreak of cholera in the Government General Hospital, with the remarks of the Superintendent, Government General Hospital, thereon.

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2. The Superintendent, Government General Hospital, was since requested to report the steps taken to prevent the risk of similar occurrence of outbreak of cholera in the hospital and also what further action he considers necessary with the same object. A copy of the reply received from the Superintendent in the matter, No. R. 186-G/28, dated 23rd January 1929, is enclosed for the information of Government.

3. This outbreak is very remarkable in that there is convincing evidence that no less than seven cholera carriers were admitted to hospital during a short period of time. All of these were suffering from other diseases and showed none of the clinical manifestations of cholera. Isolated cases of this type are by no means uncommon, but that seven should occur within a few days is so extraordinary a happening that I should refuse to believe it if the evidence were not so complete. The disquieting feature of the outbreak is that several patients actually acquired the infection while in hospital and the most important points in connexion with the enquiry are to find out how the patients might have become infected and how to prevent such an occurrence from happening again. The possible means of conveyance of the infection in this case are (1) flies and (2) the hands of nurses, ward servants or the patients themselves.

(1) There were opportunities for flies to convey the infection, neither the isolation ward, the latrines, nor the kitchens were fly-proofed. There were plenty of flies in the wards and although the patients had fly-proof lockers all of which were in good condition, it is likely that the doors of these may have been left open at times. The latrines have had flushing arrangements, but it is quite likely that stools may remain exposed to the visits of flies for considerable periods of time.

(2) The hands of nurses are not likely to convey infection; facilities are provided for the nurses to disinfect their hands but it is possible that inexperienced nurses may not recognize the necessity for strict precaution in this respect.

The ward servants are not supposed to handle the food of the patients, but many things happen which are not supposed to happen and it is within the bounds of possibility that the ward servants or the patients themselves may have been responsible for conveying infection. On the whole it seems likely that flies were the culprits. One of the surprising things is that the hospital should have remained so free from occurrences of this kind in the past; the lack of fly-proofing of the latrines and kitchens is a serious defect in the sanitation of the hospital. The Superintendent has been asked to obtain plans and estimates for the remedy of the defects which have been found to exist in the hospital.

(3) The question of fly-proofing latrines and kitchens in all our hospitals is being considered.

A report on the occurrence of some cases of cholera in the Madras General Hospital in December 1928.

1. *Introduction.*—This report is to be considered along with the statement of 12th December 1928, showing the cases of cholera ward by ward. Only bacteriologically certain, or in the absence of bacteriological examination, clinically certain cases are here considered to be cholera. Of the 22 cases here recorded, 12 did not appear to be cholera clinically. They were

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either cases of dysentery, or of diarrhœa in patients with other diseases such as tuberculosis and enteric. All these 12 'cases' have been diagnosed bacteriologically and would probably not have been found to have been cholera apart from such an examination. They have been detected through all cases of diarrhœa and dysentery being examined bacteriologically. It is to be noted that about fifty other similar cases of diarrhœa, etc., have been examined with negative results.

The ward distribution is as follows :—

No cases in two wards	...	Canning and Donovan.
One case in each six wards	...	Munro, Denison, Maitland, Mary, Florence and Buckingham.
Two cases in one ward	...	Trevelyan.
Three cases in two wards	...	Victoria and Havelock.
Four cases in two wards	...	Yale, Mortimer with the special ward.

Thus, though the cases are scattered, they are mainly in the last four wards. If we assume as a convenient theory that, once a case of cholera has occurred in a ward and has remained there for a day or more, we may regard it as the direct or indirect source of the next few cases in that ward so long as these occurred at an interval of 2—6 days from the primary case, then we have to ascertain (1) the source of the primary case, (2) the exact methods by which the secondary cases were infected from the primary—whether by flies or by the hands of nurses and attendants. This last is not easy to determine and will need further investigation. So for the present we will confine our attention to the primary cases and the possible origin of their infection.

We shall first deal with wards whose sources of infection are easy to find.

II. Ward distribution—(1) *Havelock.*—A case (Veerasami) was admitted with 'dysentery' on 2nd December 1928. Later he was found to have cholera. In all probability he had cholera to start with. He was probably the source of infection for a patient (Babu) in a bed near by. The remaining case (Ramiah Nayudu) was also a primary case directly admitted for dysentery. Thus there were two primary direct admissions and one secondary case.

(2) *Mortimer Special.*—A woman (Meenakshi) admitted for cervicitis had diarrhœa practically from the date of admission and was recently found positive for cholera. She is the probable source of infection for the other cases in Mortimer, except possibly for Manonmani a case of 'tuberculosis' who may also have been a primary case admitted on 22nd November 1928 for she always had diarrhœa.

(3) *Victoria.*—A woman (Madavi Ammal) admitted on 30th November had diarrhœa on 2nd December and died in the ward with symptoms of cholera on the night of the 4-5th December. She is the probable source of infection of the other two cases.

(4) *Florence.*—A single case admitted with tubercular enteritis on 6th December 1928 was found to have cholera vibrios in the fæces—so probably a carrier.

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(5) *Buckingham.*—One case admitted with cholera developed symptoms within 5 hours of admission.

(6) *Trevelyan.*—Patient (Peer Mahomed) admitted into Yale on 25th November and transferred to Trevelyan on the 26th, where he was operated on (Gastro entorostomy). He got dysenteric diarrhœa on the 1st December and remained in the ward until the 9th December when bacteriological examination showed that he had cholera. The origin of his infection is obscure. It is possible that he was a carrier and that the disease was brought on by the operation, or he may have been infected while in Yale, which seems the more probable—see paragraph 9 below. This case may have been the source of infection for the other Trevelyan case (Thomas)—unless the latter was infected in Munro while there for 24 hours on the 4-5th.

(7) *Yale.*—The first case on the list (Nagappa) a case admitted in August had cholera while in the ward from 6th to 7th December, and was almost certainly the source of infection for the rest judging from the fact that they occurred three days later.

(8) *Munro.*—Edwin Jayaseelan, a patient, got cholera on the 5th, for origin of infection see below.

(9) *Origin of primary foci in Yale, Trevelyan, and Munro.*—It is probable that these last two primary cases in Munro and Yale respectively got their infection from the isolation ward in which there was at this time a patient (Abdul Jaffar) admitted with cholera diagnosed clinically on the 9th November. He was retained in the hospital because he got broncho pneumonia. Bacteriologically examined on 11th December he was found negative then. It is noteworthy that the single case in Munro was in one of the four exterior beds nearest the isolation block, and that the first of the series of cases in Yale was in bed No. 8 also near the isolation ward. This suggests fly borne infection. The first case in Trevelyan, Peer Mahomed, was either infected there or more probably in Yale, if as is probably the case, the infection was fly borne. He had occupied an emergency bed on the floor in Yale in some position unknown. Another possibility is infection by attendants. The relieving nurse during nurses' meal hours worked all three wards, Yale, Munro and the isolation ward. So that is a possibility, but we think that the evidence suggests that fly infection is more probable.

(10) *Denison.*—One case. Origin obscure. Appeared to have acute dysentery.

Possibilities—

(1) Infected from Trevelyan nearby from patient Peer Mahomed.
(2) Auto infection after operation—for piles.

(11) *Maitland.*—Cholera in an enteric case.

(12) *Mary.*—One case.

It is possible that the Maitland case who died in the last stage of enteric with diarrhœa was a cholera carrier, and it is possible that the Mary case got its infection from food surreptiously conveyed to her from outside by relations, but on the whole it would be best to consider the origin of these two cases as doubtful—fly borne infection is always a possibility.

III. *General sources of infection*—(1) *Water and Food.*—The water-supply has been examined and found free from cholera vibrois. The ordinary routine is to supply only boiled water for drinking. All milk supplied is also boiled. The distribution of cases is quite against the theory of an infection of the water or the general food or milk supply.

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(2) *Nurses and staff.*—There is no good evidence connecting any special members of the staff with being carriers of the disease. Casual infection in wards can of course be caused by the hands. The stools of a few nurses, of all the cooks of the hospital, and of all the orderlies in Yale ward, have been examined bacteriologically for cholera with negative results.

(3) *Flies.*—There are usually a few flies about more particularly in the lower wards on the south side. Fly papers are as a routine in general use. As noted probably some of the infections were fly borne.

IV. Conclusion.—(1) In the first five wards mentioned it seems clear that there were no less than seven cases of infection from outside the hospital who were admitted for various other diseases while infected with cholera. They were either carriers or were in the incubation period of the disease. Seeing that this is the second year of an epidemic of cholera in Madras, it is probable that many ordinary patients are carriers and it is to be remembered that the capacity to infect others is greatly increased by saline purges as is common in hospitals. All new admissions are now being examined bacteriologically to investigate this point. From these seven primary cases or carriers, five secondary cases developed in the wards mentioned.

(2) There is another group of eight cases in Yale, Munro, Trevelyan and Denison, in which the primary cases were perhaps infected while they were in Yale or Munro wards from a patient in the isolation ward.

(3) There are no definite indications of the source of the remaining two cases.

Havelock ward.

Number and name.	Disease.	Date of admission.	Date of symptoms.	Bac. result.	Disposal.
1. Veeraswami Pillai.	B. Dysentery ..	2/12	2/12	Plus 8/12	F. Shed 8/12 died.
2. Ramayya Nayudu.	Pyrexia and motions C blood.	4/12	8/12	Plus 9/12	F. Shed 9/12.
3. Balu	K.A.	17/11	6/12	Plus 6/12	F. Shed 6/12 I.H.D. 9/12.

Mortimer ward.

Number and name.	Disease.	Date of admission.	Date of symptoms.	Bac. result.	Disposal.
1. Devakiammal ..	Hammerrehoids.	3/12	3/12	Not sent.	F Shed 12/12 I.D.H. 12/12.
2. Viruthambal ..	Lupus ..	28/6	10/12	Do.	F. Shed 12/12 I.D.H. 12/12.
3. Manonmany ..	T.P. and Diarrhœa.	22/11	22/11	Plus 12/12	F. Shed 13/12 died 13/12.

Special department.

Number and name.	Disease.	Date of admission.	Date of symptoms.	Bac. result.	Disposal.
1. Meenachi ..	Cervacitis and Syphilis.	28/11	1/12	Plus 11/12	F. Shed 11/12 I.D.H. 11/12.

Victoria ward.

Number and name.	Disease.	Date of admission.	Date of symptoms.	Bac. result.	Disposal.
1. Madavi Ammal ..	Influenza ..	30/11	2/12	Not sent.	F. Shed 4/12 died 5/12.
2. Antony Ammal ..	Enteric ..	22/9	6/12	Do.	F. Shed 5/12 died 6/12.
3. Beejan Bee ..	Pyrexia ..	2/12	7/12	Do.	Went home 8/12.
4. Annammal ..	Do. ..	4/12	8/12	Plus 8/12.	Died 10/12.

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Number and name.	Disease.	Date of admission.	Date of symptoms.	Bac. result.	Disposal.
		Florence ward.			
1. Krishnamoorthi ..	Tub. Enteritis.	6/12	6/12	Plus 11/12	F. Shed I.D.H. 12/12.
		Buckingham ward.			
1. Munuswami ..	Fracture fore-arm.	7/12	11/12	Plus 12/12	I.D.H. 12/12.
		Trevelyan ward.			
1. Peer Mahomed ..	Duod Ulcer ..	25/11	1/12	Plus 8/12	F. Shed 9/12 died 9/12.
2. Thomas	Tub. Peritonitis	5/12	12/12	Plus 11/12	Admitted Maitland 12/11. Admitted Munro 4/12. Admitted Trevelyan 5/12. Transferred F. Shed 12/12. Transferred I.D.H. 12/12.
		Yale ward.			
1. Nagappa	Fracture leg ..	28/8	6/12	Plus 8/12	F. Shed 7/12 I.D.H. 9/12.
2. Rangaswami ..	Hæmorrhoid.	4/12	9/12	Not sent.	B. Shed died 10/12.
3. Vareed	Strict, Oesoph.	27/12	10/12	Plus	I.D.H. 10/12.
4. Sundaram ..	Duodenal Ulcer.	23/11	10/12	Plus 11/12	F. Shed I.D.H. 10/12.
		Munro ward			
1. Edwin Jayaseelan.	Multiple Arthritis.	23/11	5/12	Plus 1/12	F. Shed 9/12 I.D.H. 9/12.
		Denison ward.			
Father Elias ..	Hæmorrhoids.	30/11	8/12	Plus 8/12.	Died 8/12 ; operated 5/12.
		Maitland ward.			
Krishnan Nambiyar ..	Enteric ..	8/11	9/12	Plus 10/12.	F. Shed 10/12 died.
		Mary ward.			
Jagathambal ..	Abscess groin.	13/11	10/12	Plus 11/12.	F. Shed 11/12 I.D.H. 11/12.

(ii)

Letter from the Superintendent, General Hospital, Madras, to the Personal Assistant to the Surgeon-General with the Government of Madras, dated the 23rd January 1929, R. No. 186-G/28.

[*Reference.*—Your letter No. 2454-3-G/28, dated 14th January 1929, regarding preventive measures to be adopted in respect of cholera.]

The following measures are in force :—

1. *Diet.*—All self-dieting is suspended pending the end of the cholera epidemic.

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All milk is boiled. This has always been done to prevent carriage of various diseases. The milk is kept covered, as protection from flies and dust. All water for drinking is boiled.

2. *Carriers.*—A look-out is kept for carriers entering the hospital. The schools of all new in-patients are cultivated. They are re-cultivated after administration of a purgative.

3. *Isolation block.*—This block has been fly-proofed. Cholera cases are only retained here until fit to move to the Infectious Diseases Hospital. They are only admitted when requiring treatment urgently; otherwise they are sent on to the Infectious Diseases Hospital at once.

4. *Staff nurses.*—The Matron Superintendent has warned all nurses to take exceptional care to prevent infection of patients in the hospital by contact with hands.

5. *Ward boys.*—This is a more difficult matter and ward boys are taught disinfection of hands to avoid causing infection and old ward boys receive a separate instruction annually in this matter.

Lascars and totis are frequently changed as they are not permanent servants and the prevention of infection by them is inculcated as far as possible. An increase of staff will be asked for to enable a permanent staff to be kept at the infectious block and avoid transfers to and from infectious and general wards.

6. *Sanitation.*—In addition to ordinary sanitary measure, special attention is given to guarding fæces kept for inspection from flies.

The Matron Superintendent is emphasizing this among the nursing staff and also the quick removal of soiled linen.

7. *Measures suggested.*—(1) It has been suggested that all latrines and places where bed-pans are kept should be fly-proofed. Fly-proofing should be extended to the Indian kitchen. The British kitchen is already fly-proofed.

(2) The isolation block in the remodelling scheme will, it is hoped, be taken in hand early. An application for this has been sent in. It is proposed to try an automatic finish in one latrine. Its advantages may be greater than its disadvantages.

Second Report.

Letter from the Surgeon-General with the Government of Madras, dated the 12th March 1929, R. No. 2454-Gen./28.

I have the honour to forward a second report on the cholera outbreak at the General Hospital. Thanks to the thorough investigation which has been carried out by Lieut.-Colonel King and the other members of the Committee, it is now clear that before any suspicion of cholera was aroused there were three patients in the hospital who were passing cholera vibrios in their stools without showing any signs of cholera. The infection from these to the other patients was probably by flies.

Such occurrences are, fortunately, very rare, but none the less it is very important to take every possible precaution against the spread of infection. The recommendations of the Committee have been carried out; the isolation ward has been fly-proofed and arrangements are being made to fly-proof the latrines and all places in which stools are kept.

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Instructions have also been issued that there should be a prompt bacteriological examination in all cases of diarrhœa.

I am much indebted to Lieut.-Colonel King for making so thorough an investigation of the outbreak.

A second report on cholera in the Madras General Hospital in December 1928.

After the last report of the 12th December 1928, three more cases occurred among patients already in the hospital :—

(1) *Vasu.*—A case of peptic ulcers admitted on 4th December 1928 first in Yale and then in Clive wards. Cholera symptoms on 13th December 1928 found positive.

(2) *Ramaswami.*—A case of stricture of the urethra admitted on 5th December 1928 in Buckingham ward. Cholera symptoms on 13th December 1928 found positive.

(3) *Arumugam.*—Admitted with diarrhœa on 3rd December 1928 in Donovan ward. Slight diarrhœa continued was found positive on 13th December 1928.

One case was admitted on the 18th with symptoms of cholera and was positive bacteriologically. He, of course, was an absolutely outside case.

A statement from the Health Officer of Madras showing the number of cases of cholera from week ending 10th November 1928 to 9th February 1929 is attached. It shows that the hospital epidemic occurred at the end of the main epidemic in the city.

In 146 examinations made on the stools of new admissions from 18th December 1928 to 5th February 1929, none were found positive cholera. Accordingly our first conclusion must be partially revised. It is very unlikely that carrier infection played an important part in introducing cholera into the hospital. In view of this finding, of the seven cases considered in the first report to be primary cases, we must now exclude three cases (the two in Maitland and one in Florence) who probably *did not* import the infection from outside. All three were cases of diarrhœa from other causes (tuberculosis in two cases and of unknown causation in the third). Probably these three were infected while in the hospital. There is no further evidence on the method of conveyance of infection from the remaining four primary cases.

On the whole, infection from these sources conveyed by flies to the food of individual patients seems to account best for the facts. The lessons to be learnt are—

(1) The absolute necessity for a good fly-proof isolation block as far as can conveniently be managed from the main hospital—See remarks on Yale, Trevelyan and Munro in the first report.

(2) The great importance of prompt bacteriological examination of the stools of all cases of diarrhœa in time of cholera epidemics, and in the meantime the considering of all such cases as infectious. The succession of cases in Victoria ward illustrates this.

(3) The continued necessity of the routine measures already in existence for safeguarding water, milk and the food of patients.

H. H. King, Lieut.-Col., I.M.S.
J. M. Skinner.
M. R. Guruswami.

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Statement of attacks and deaths from cholera in Madras from week ending 10th November 1928 to 9th February 1929.

	Attacks.	Deaths.
Week ending 10th November 1928	48	21
Do. 17th Do.	41	31
Do. 24th Do.	32	15
Do. 1st December 1928	33	15
Do. 8th Do.	11	6
Do. 15th Do.	28	6
Do. 22nd Do.	6	4
Do. 29th Do.	1	1
Do. 5th January 1929	6	2
Do. 12th Do.	4	3
Do. 19th Do.	1	...
Do. 26th Do.	4	1
Do. 2nd February 1929	1	4
Do. 9th Do.	2	...
Total ...	218	109

APPENDIX III.

[Vide answer to question No. 1919 asked by Mr. A. B. Shetty at the meeting of the Legislative Council held on the 26th March 1929, page 865 supra.]

Copy of letter from the Secretary to the Physical Education Committee, to the Secretary to Government, Law and Education Department, dated 1st October 1928.

I have the honour to report that Government Memorandum No. 2184–B–1, Education, dated 20th September 1928, was considered at the meeting of the Committee on Physical Education held on 22nd September 1928 and I am to reply as follows.

2. The Committee are grateful to Government for the information contained in G.O. Mis. No. 2126, Revenue, dated 12th September 1928, but are unable to understand the purpose for which it was communicated.

3 The necessity for providing a new playing-field for the schools dispossessed or for the restoration of the old one is obvious, but the Committee cannot think that Government expect them to go round Madras in search of new playing-fields for this purpose.

4. The Committee are gravely discouraged by the news. They have been asked to submit to Government proposals for the provision of playing-fields and while their deliberations as to the best and surest manner of securing this end are proceeding they are confronted by the news of the resumption by Government of valuable playing-field acquired with much difficulty by a previous Committee. They feel that the same fate may await the results of their labours and that events will prove their deliberations to have been a mere waste of time and their recommendations fruitless. In the opinion of

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